LSST NextGen Science

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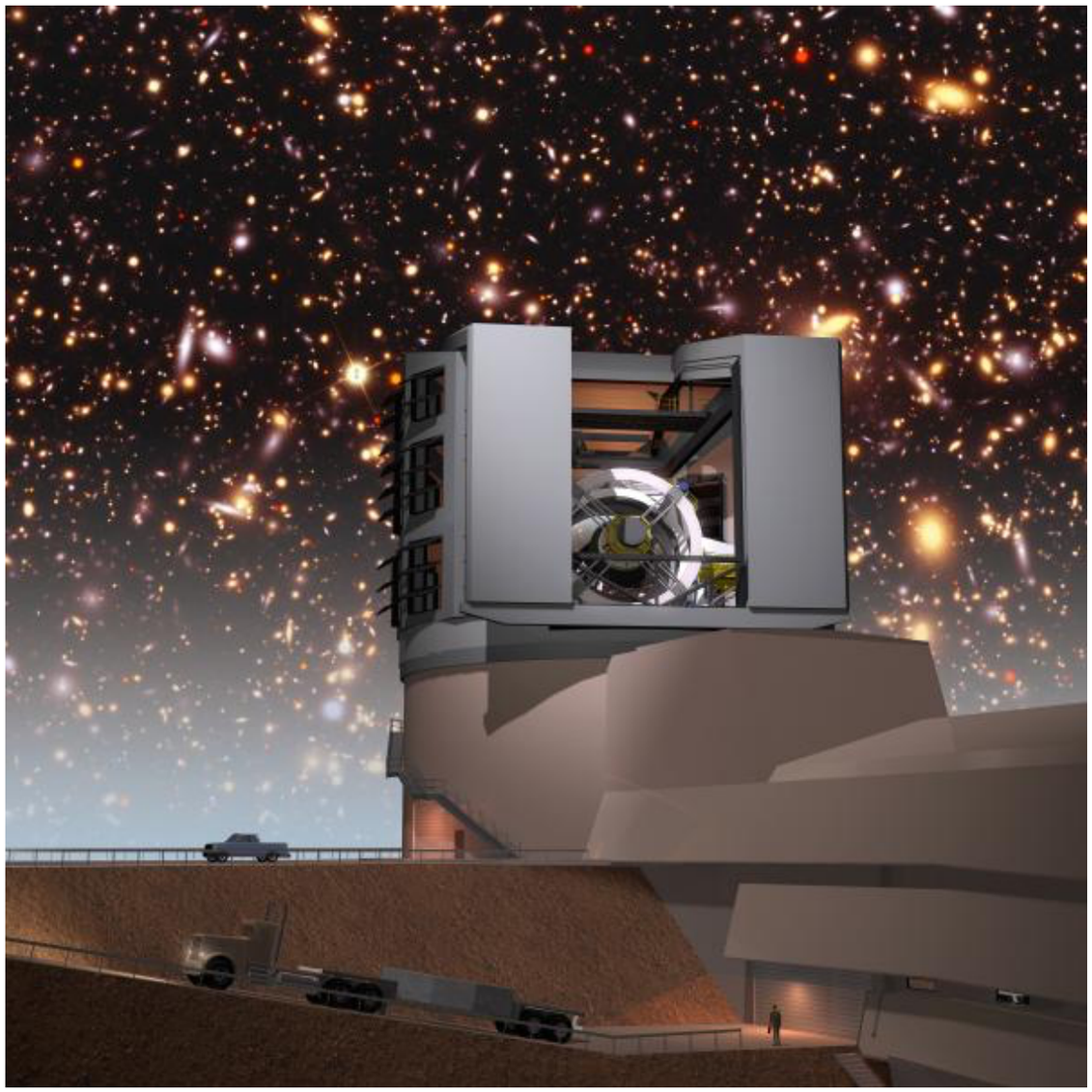


credit: LSST

Large Synoptic Survey Telescope

Astro2020 APC white paper

- Notice of Intent submitted by F. Bianco (Delaware), N. Brandt (Penn State), G. Galaz (PUC), J. Gizis (Delaware), S. Jha (Rutgers), S. Kaviraj (Hertfordshire), J. Newman (Pitt), A. Verma (Oxford), M. Wood-Vasey (Pitt)
- complements technical white paper from the project; we will focus on the science cases in three scenarios
- put science opportunities with LSST in context of other facilities that are expected to be available in 2030s
- community-driven through the science collaborations
  please join us! email: saurabh@physics.rutgers.edu
- tentatively due July 1, 5-10 pages, format TBD

Astro2020 APC white paper

- complements technical white paper from the project; we will focus on the science cases in three scenarios
  1. No modifications to the telescope or camera, but complete flexibility to undertake new observing strategies, cadence, sky coverage, exposure time, … building on the discoveries and progress made during LSST operations and the global scientific landscape.
  2. Minor modifications to the camera, e.g., new filters.
  3. Replacement of the camera with another instrument (e.g., a wide-field multiplexed spectrograph, NIR camera) or other major modifications to the telescope.
- *please join us! email:* saurabh@physics.rutgers.edu

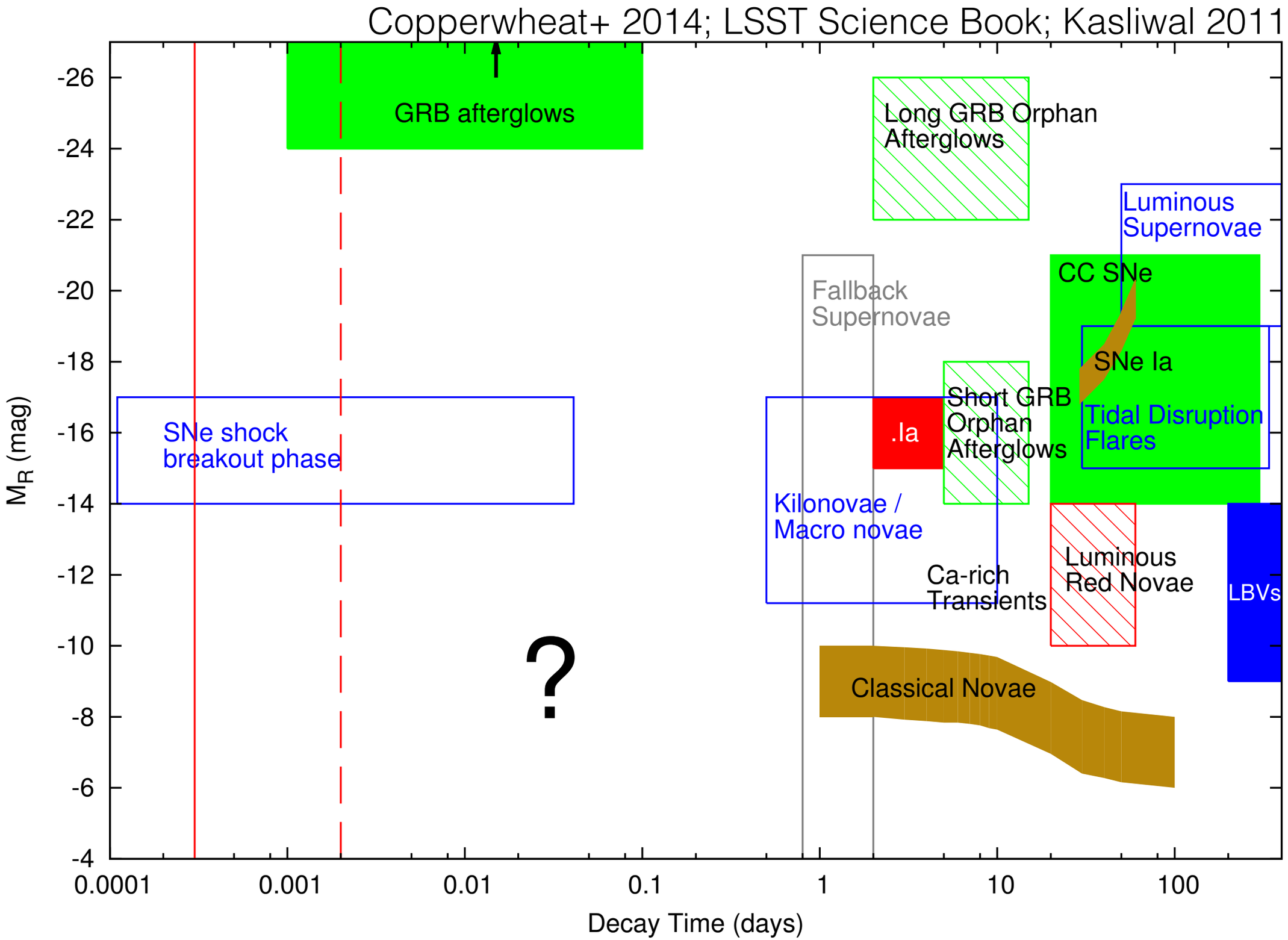
a case for LSSTCam

- LSST is revolutionary for time-domain astrophysics
  - wide range of frontier science: solar system, exoplanets, stellar variables and microlensing, standard candles, novae, supernovae, kilonovae/GW counterparts, GRBs, AGN, lens time delays, …
  - different sky area, timescales, wavelengths

- LSST will usher in the age of *celestial cinematography*

  the movie of the Universe does not end in 2032!
  we will need an observatory for transient discovery

a case for LSSTCam



a case for LSSTCam

- 46 LSST Observing Strategy White Papers
  - 20 full sky, *26 mini-surveys*
  - huge range of science: solar system, Galactic, exgal
  - wide range of (filter) cadence, exposure time, sky area

(summary from Lynne Jones)

https://www.lsst.org/submitted-whitepaper-2018

- it is unlikely that everyone will be happy with LSST 10yr observing strategy
- what are forefront science questions in 2032?

- opening up to **proposal-based surveys using LSSTCam** provides an excellent avenue to the best science

a case for LSSTCam

- take advantage of our fast-slewing wide-field telescope: cover area with quick exposures (not ~hour long)
- cost effective
- static depth 10 yr *griz* is great & hard to improve
- new filters: narrow-band, shifted (photo-z + transients), variable on focal plane (e.g., SDSS-like for fast-cadence multiwavelength data)
- NIR (if we can keep similar wide field), energy measuring optical